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BELL, BOYD & LLOYD, LLC P. O. BOX 1135 CHICAGO, IL 60690-1135			EXAMINER LEUNG, CHRISTINA Y	
			ART UNIT 2633	PAPER NUMBER

DATE MAILED: 11/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/019,526	Applicant(s) NOE, REINHOLD	
	Examiner Christina Y. Leung	Art Unit 2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14, 15, 17-21, 27 and 28 is/are rejected.
- 7) ☒ Claim(s) 16 and 22-26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 14, 15, 17, 18, 21, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jenson (US 4,973,969 A) in view of Barlow et al. (US 5,654,793 A).

Regarding claim 14, Jenson discloses a device for evaluating an electrical baseband signal (Figure 2) comprising:

at least one multiplier (exclusive OR gates 40a...h) which calculates a value of an autocorrelation function of the baseband signal by multiplication of a value of the baseband signal by a delayable value of the baseband signal (column 2, lines 5-14; column 6, lines 15-54); and

an averaging device 50 for averaging the calculated value of the autocorrelation function (column 6, lines 55-56).

Jenson discloses that the electrical baseband signal is converted from an optical signal (column 4, lines 39-68) but is silent regarding polarization mode dispersion. However, it is well understood in the art that optical signals may be affected by polarization mode dispersion, and Barlow et al. further teach a system including an optical signal and generally suggest that the result of an autocorrelation function may be used to indicate the presence of polarization mode dispersion (column 1, lines 57-67). Given the teaching of Barlow, it would have been obvious to

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a person of ordinary skill in the art to indicate the presence of polarization mode dispersion with the output of the autocorrelation device disclosed by Jenson, in order to obtain this additional information about the related optical signal, since Barlow teaches that the output of a autocorrelation function is inherently related to polarization mode dispersion.

Regarding claim 15, Jenson disclose a delay line 30 with taps, wherein taps with different delays are respectively connected to inputs of the at least one multiplier 40a...h (column 6, lines 15-54).

Regarding claim 17, Jenson et al. disclose that two delay lines (i.e., wherein one delay line is specifically marked as delay element 30 and wherein the other delay line is the transmission line parallel to element 30) are provided which, in a region in which the two delay lines exhibit an assignment via the inputs of the at least one multiplier, are traversed in a same direction such that the delays occurring between adjacent multipliers are subtracted from one another to form a delay different between the adjacent multipliers (Figure 2).

Regarding claim 18, Jenson et al. disclose a plurality of delay lines of different lengths to whose ends inputs of multipliers are connected (Figure 2).

Regarding claim 21, Jenson discloses that the delays that occur are equidistant with a constant delay difference (column 6, lines 38-39).

Regarding claim 27, Jenson discloses that the multiplier is an EXOR gate (column 6, lines 45-48).

3. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jenson in view of Barlow et al. as applied to claim 18 above, and further in view of Cuzin et al. (US 4,933,634 A).

Regarding claim 19, Jenson et al. in view of Barlow et al. describe a system as discussed above with regard to claim 18 including a delay line but do not specifically disclose detour lines. However, various ways of implementing delay lines are well known in the art, and Cuzin et al. teach changing the path length of a transmission line to create a “detour line” providing a desired delayed transmission (Figure 3B shows a line having distance x_2 between elements in relation to another line having distance x_1 between elements in Figure 3A). It would have been obvious to a person of ordinary skill in the art to provide detour lines as suggested by Cuzin et al. in the delay line disclosed by Jenson et al. as an engineering design choice of a way to provide a delayed transmission.

4. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jenson in view of Barlow et al. as applied to claim 18 above, and further in view of Saxe et al. (US 5,144,525 A).

Regarding claim 20, Jenson et al. in view of Barlow et al. describe a system as discussed above with regard to claim 18 including a delay line but do not specifically disclose buffer amplifiers. However, various ways of implementing delay lines are well known in the art, and Saxe et al. teach providing buffer amplifiers 42 in a delay line (Figure 3; column 4, lines 7-11). It would have been obvious to a person of ordinary skill in the art to provide buffer amplifiers as suggested by Saxe et al. in the delay line disclosed by Jenson et al. as an engineering design choice of a way to provide a delayed transmission.

5. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jenson in view of Barlow et al. as applied to claim 14 above, and further in view of Sevenhans et al. (US 5,528,637 A).

Regarding claim 28, Jenson in view of Barlow et al. describe a system as discussed above with regard to claim 14 including multipliers 40a...h but does not specifically disclose that they may be Gilbert multipliers. However, various elements for providing a multiplier function in an electrical circuit are well known in the art, and Sevenhans et al. particularly teach that multipliers providing an EXOR such as already disclosed by Jenson may specifically comprise Gilbert multipliers (column 7, lines 30-34). It would have been obvious to a person of ordinary skill in the art to specifically use an Gilbert multiplier as taught by Sevenhans et al. in the system disclosed by Jenson simply as an engineering design choice of a well known way to implement the already disclosed multiplier element. Jenson already discloses that the multipliers 40a...h may be analog multipliers instead of digital EXOR gates (column 8, lines 19-20), and it would be understood in the art that Gilbert multipliers would be appropriate for usage in such an analog circuit arrangement.

Examiner also respectfully notes that Applicants acknowledge on page 4, line 29 of the specification that various multiplier circuits may be used. The claimed differences exist not as a result of an attempt by Applicants to solve an unknown problem but merely amount to the selection of expedients known as design choices to one of ordinary skill in the art.

Allowable Subject Matter

6. Claims 16 and 22-26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter:

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As noted in the previous Office Action, the prior art, including Jenson and Barlow et al., does not specifically disclose or fairly suggest a device for detecting polarization mode dispersion including all the limitations and elements recited in claims 23-26 (and including all the limitations of claim 14 on which the claims depend), particularly including the combination of a multiplier for calculating an autocorrelation of a baseband signal; an averaging device for averaging the autocorrelation; a PMD compensator; and a regulator.

The prior art also does not specifically disclose or fairly suggest a device for detecting polarization mode dispersion including all the limitations and elements recited in claims 16 and 22 (and including all the limitations of claims 14 and 15 on which the claims depend), particularly wherein the baseband signal runs in opposite directions such that the delays occurring between adjacent multipliers are added to from a delay difference between the adjacent multipliers or wherein a delay different is at least approximately equal to a symbol duration of the baseband signal.

Response to Arguments

8. Applicant's arguments with respect to claims 14, 15, 17-21, 27, and 28 have been considered but are moot in view of the new ground(s) of rejection.

In response to Applicant's argument that Jenson does not specifically disclose that the autocorrelation indicates the presence of polarization mode dispersion, the fact that Applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

In response to Applicant's argument that the references fail to show certain features of Applicant's invention, it is noted that the features upon which Applicant relies (i.e., adaptive polarization mode dispersion compensation elements) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Again, Examiner respectfully notes that Jenson discloses all the elements of the device recited in claim 14, including "a value of an autocorrelation function." Barlow et al. teach that the output of an autocorrelation function inherently provides some indication of the presence of polarization mode dispersion.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Y. Leung whose telephone number is 571-272-3023.

The examiner can normally be reached on Monday to Friday, 6:30 to 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571-272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christina Y Leung
Christina Y Leung
Patent Examiner
Art Unit 2633